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United States
Department of
Agriculture

Marketing and
Regulatory
Programs

Agricultural
Marketing
Service

Livestock and Seed
Program

Items of Interest in Seed Control

Summer 1998

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REPORT ON THE 25TH CONGRESS OF THE INTERNATIONAL SEED TESTING ASSOCIATION

Dr. Richard C. Payne represented the Agricultural Marketing Service and the U.S. Department of State by serving as the United States' voting delegate at the International Seed Testing Association (ISTA) Congress held in Pretoria, South Africa, April 15-24, 1998. Prior to the start of the ISTA Congress, Payne conducted a two-day variety-testing workshop. The workshop, attended by 30 people, stressed the practical application of laboratory testing procedures as well as some newer electrophoresis and herbicide resistance testing techniques.

During the technical committee meetings, Payne represented the United States on both the rules and referee testing committees and as chairperson of the variety committee. During the business meeting, action was taken on several items of interest to the United States. The decision of the Executive Committee to remove Taiwan as a voting member, at the request of the People's Republic of China, was suspended pending a review of the term "government" in the ISTA Constitution by the Executive Committee.

A proposal to add two seed vigor testing procedures to the International Rules for Testing Seed (ISTA Rules) was withdrawn due to lack of support. This proposal was opposed by the American Seed Trade Association (ASTA) and the International Seed Trade Federation (FIS) because they fear that vigor test results are not well understood and this would lead to increased litigation.

Proposed changes to the ISTA Rules, that would reduce the sampling intensity of large seed lots from 80 or more primary samples to 30, were approved. Reducing the maximum number of primary samples to 30 would make sampling procedures in the ISTA Rules identical to those used in the United States for domestically sold seed and reduce the cost of exporting seed where ISTA Rules are mandated. This proposal was supported by both ASTA and FIS.

The members approved a proposed experiment for a number of crops where seed lots, larger than those allowed in the ISTA Rules, could be shipped in international trade and tested to determine if they have acceptable levels of uniformity. This proposal was supported by both ASTA and FIS.

SEED CERTIFICATION MEETING

Seed Regulatory and Testing Branch (SRTB) Chief Jim Triplitt attended the Association of Official Seed Certifying Agencies (AOSCA) meeting held in Tucson, Arizona, from June 14-17. AOSCA reported that the genetic standards of all State member agencies had been evaluated and found to be in compliance with the Federal Seed Act (FSA). The members approved new standards for chemically assisted hybrid wheat, cytoplasmic male sterile hybrid wheat, and pre-variety germplasm. Chile and Uruguay were approved as International Affiliate members of AOSCA. The problem of re-certifying varieties, protected under the Plant Variety Protection (PVP) Act certification option and under Title V of the FSA, beyond the number of generations specified on the certificate of protection was discussed at length.

AMERICAN SEED TRADE ASSOCIATION MEETING

SRTB Chief Jim Triplitt traveled to Toronto, Ontario, Canada, and attended the first joint meeting of the ASTA and the Canadian Seed Trade Association. The two groups met from June 21-24, 1998. The president of Monsanto Corporation addressed the opening session and discussed "Biotechnology Trends--Impacts on the Seed Industry." The many committees addressed various aspects of biotechnology, intellectual property rights, and other seed industry issues. A topic of interest for the FSA program was tolerances for seed count labeling. ASTA passed resolutions on seed count tolerances, the trademarking of dyes and colorants applied to seeds, uniform seed law requirements for lawn seed labeling, and fluorescence testing of ryegrasses. The Officers of ASTA for the coming year are President Bill Whitacre, First Vice President Wayne Beck, and Second Vice President Nathan Boardman.

ASSOCIATION OF OFFICIAL SEED ANALYSTS MEETING

Dr. Richard Payne and Botanist Dave Bitzel of the SRTB attended the annual meeting of Association of Official Seed Analysts (AOSA), June 21-25 in Boise, ID. Payne chaired meetings of the Research Committee and Seed Count Committee in addition to taking part in a symposium about ISTA and ISTA activities. Bitzel attended several committee meetings including the Tetrazolium Committee of which he is a member. Two technical symposiums, one about testing vegetable and flower seeds for various quality factors and another about problems associated with testing seeds of native species, were held. The Business Meeting was attended by representatives of 34 official laboratories. During this meeting, 56 amendments or additions to the AOSA Rules for Testing Seeds were approved. A number of changes to the AOSA by-laws were approved.

OREGON SEED INDUSTRY CONFERENCE

SRTB Seed Marketing Specialist Harold Laswell participated in a Seed Growers/Conditioners Conference held May 13 and 14 in Albany, OR. The conference was sponsored by Oregon State University Seed Services, USDA-Agricultural Research Service (ARS), the Oregon Seed Council, and the Oregon Seed Trade Association (OSTA). Over 260 seed growers and conditioners, and personnel from the OSTA, the Oregon Seed Certification Service, State and private seed laboratories, and the Oregon Department of Agriculture attended and participated in the conference. Most of the seed produced by those attending the conference is shipped in interstate commerce and subject to the FSA. Laswell spoke to the conference about FSA requirements and enforcement. At the Oregon Department of Agriculture information booth, Laswell provided informational material about the FSA, answered questions, and responded to concerns raised by conference attenders.

ASSOCIATION OF AMERICAN SEED CONTROL OFFICIALS MEETING

The Association of American Seed Control Officials (AASCO) met July 12-17, 1998, in Salt Lake City, UT. James Warren (NC) is currently AASCO president. On Monday, July 13, the four regional seed control associations met. Reports for the four regional meetings follow. In addition to reports from affiliated organizations, committee reports, and the business meeting, members heard talks on several issues important to AASCO members. The status of USDA-Animal and Plant Health Inspection Service (APHIS) regulations implementing the Seed Health Initiative including plans to accredit private laboratories to conduct seed health tests for phytosanitary purposes was discussed. A panel discussed the need for uniform

labeling and gave views on whether laws should or should not allow "Variety Not Stated" wording in lieu of the variety name and gave views on the merits of using "Variety Unknown" in lieu of "Variety Not Stated." A series of recent complaints that herbicide applied to herbicide resistant cotton varieties caused yield losses was discussed from the perspective of the seed company and the State seed control official. Investigation and enforcement issues relating to herbicide resistant crops were also discussed. Other presentations were given on hybrid wheat developments, on information available on the PVP Office home page, and on the validity of ryegrass fluorescence as a means to distinguish annual and perennial ryegrass. A preliminary report on a study of seed sampling triers was also given.

A report was presented on the status of test procedures and applicable tolerances for seed count labeling verification. Also, the chairperson of the New Seed Technologies Committee discussed progress in the committee's effort to address regulatory issues on products of new technologies such as genetically engineered varieties. An update on the status of the AASCO home page was also given.

At the business meeting, AASCO made a minor change to the Recommended Uniform State Seed Law by removing the name of each state from the arbitration notice. In addition to a courtesy resolution, AASCO passed resolutions: (1) requesting Congress to appropriate additional funds to the USDA SRTB to make available matching grants for State seed regulatory programs; (2) urging that action be taken to include flower seed in the FSA; and (3) asking APHIS to put the draft "Standards for Seed Laboratory Testing and Field Inspection" on the Internet for review. Resolutions from the north central region on test date uniformity and from the Long Range Planning Committee on registration of varieties and brands were not adopted but referred to the President for assignment to committees for more study.

Association of Seed Control Officials of the Northeastern States

The Association of Seed Control Officials of the Northeastern States (ASCONES) met Monday, July 13, in Salt Lake City, UT with representatives of Maryland, Pennsylvania, Virginia, and the SRTB attending. Joe Garvey (PA) is ASCONES' president. The State members and SRTB each reported on the status of their regulatory activities. The group also discussed a number of issues including maintaining lists of turf-type tall fescues and perennial ryegrasses, misuse of labels used to relabel carryover seed for germination, the use of a sell-by date in lieu of a date of test, and "variety" versus "variety not stated" labeling. The ASCONES members also discussed laboratory test reports that indicate the seed sample was tested for noxious-weed seeds of all states when, in fact, the sample was not tested for undesirable-grass seeds which are noxious-weed seeds in six northeastern states. State members also said that flower seeds are an increasing problem and that the FSA should be amended to cover flower seeds. Because a quorum was not present, ASCONES could conduct no official business. The status of ASCONES as a viable organization was discussed because of the low attendance and lack of a quorum.

North Central States Seed Control Officials Association

The North Central States Seed Control Officials Association (NCSSCOA) met July 13, with President John Harri (IA) presiding. Representatives from Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, Canada, and SRTB were present. The group adopted the minutes of the last meeting, heard reports from

the treasurer, member States, the Canadian Food Inspection Agency, and SRTB. NCSSCOA discussed several topics at length. Subjects of importance that were discussed included standardized test dates, variety labeling, regulation of genetically altered seed, Conservation Reserve Program, cost sharing of State seed programs through grants from USDA, and self-inspection by private companies related to phytosanitary certificates. NCSSCOA initiated and passed two resolutions dealing with uniformity of test dates and the matching grants issue. Details of the resolutions are given in the AASCO section.

Southern States Seed Control Officials Association

President David Buckingham (KY) presided over the July 13, 1998, Southern Seed Control Officials Association (SSCOA) meeting. Representatives from six States (Arkansas, Kentucky, Louisiana, Mississippi, North Carolina, and Oklahoma) and the SRTB attended. SRTB Marketing Specialist Harold Laswell gave a report on FSA regulatory actions and other topics of interest involving the SRTB. The titles of topics discussed included: Arbitration Experiences in Mississippi, Licensing Requirements for Seed Processors and Dealers, Grass Seed Labeling, Testing and Labeling Herbicide Tolerant (RoundupTM ready) Crops, Labeling Predated Seed and Use of "Sell-by" (Expiration Date) Labeling, Variety Not Stated Labeling Requirements, and Labeling Other Crop Seed Found in a Purity Analysis on a "Rate of Occurrence (per pound) Basis."

State officials reported on conditions and new developments in each of their states. A recommendation, in the form of a resolution, to urge the necessary actions to incorporate flower seed (including wildflower seed) into the FSA was passed. This resolution was to be considered by the total membership of the AASCO in the final business meeting.

Western Association of Seed Control Officials

President Jim Cramer (OR) presided as the Western Association of Seed Control Officials (WASCO) met in Salt Lake City on Monday, July 13, as a part of the annual AASCO meeting. Ten of the 14 members were represented including Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, Utah, Washington, and USDA. Jonathan Farmer represented the SRTB.

Arizona reported that they found less than 0.02 percent karnal bunt in the samples they have tested. California will amend their arbitration regulations January 1, 1999. Colorado has added 28 prohibited and 15 restricted noxious-weed seeds to their seed law. They also added the provision that seed will be stop-saled if it contains more than five kinds of noxious-weed seeds. The Colorado noxious-weed changes follow the WASCO report. Idaho reported a 14.1 percent violation rate for samples tested. Idaho is considering raising their licensing fee. Montana is beginning a major overhaul of their seed law. New Mexico seed enforcement is under-funded. Of 1,600 samples tested by New Mexico, 165 were for enforcement. Oregon has a proposed change for testing of sod quality seed. Washington has taken 702 samples so far this year. They are moving to new offices. Jonathan Jones of APHIS gave a presentation on the Seed Health Initiative. APHIS is working on a final rule regarding accreditation. Dr. Reed Barker of ARS gave a presentation on the variability in fluorescence testing of ryegrass. ARS conducted the research in cooperation with Oregon State University. Sharon Davidson, President, Society of Commercial Seed Technologists, gave a presentation on tetrazolium testing as a basis for labeling germination of certain grasses.

COLORADO ADDS NOXIOUS-WEED SEEDS

Colorado has added 21 prohibited and 5 restricted noxious-weed seeds to their seed law. All but one will be enforced effective January 1, 1999. Dame's Rocket (*Hesperis matronalis*) will be enforced effective January 1, 2001.

Effective January 1, 1999.

Prohibited

Anoda, spurred	(<i>Anoda cristata</i>)
Bouncingbet	(<i>Saponaria officinalis</i>)
Camelthorn	(<i>Alhagi pseudalhagi</i>)
Chamomile, scentless	(<i>Anthemis arvensis</i>)
Cinquefoil, sulfur	(<i>Potentilla recta</i>)
Clematis, Chinese	(<i>Clematis orientalis</i>)
Daisy, oxeye	(<i>Chrysanthemum leucanthemum</i>)
Houndstongue	(<i>Cynoglossum officinale</i>)
Knapweed, black	(<i>Centaurea nigra</i>)
Mallow, Venice	(<i>Hibiscus trionum</i>)
Medusahead	(<i>Taeniatherum caput-medusae</i>)
Millet, wild proso	(<i>Panicum miliaceum</i> subsp. <i>runderale</i>)
Nutsedge, yellow	(<i>Cyperus esculentus</i>)
Rue, African	(<i>Peganum harmala</i>)
Sage, Mediterranean	(<i>Salvia aethiopsis</i>)
Saltcedar	(<i>Tamarix parviflora</i>) and (<i>Tamarix ramosissima</i>)
Skeltonweed, rush	(<i>Chondrilla juncea</i>)
Spurge, cypress	(<i>Euphorbia cyparissias</i>)
Spurge, myrtle	(<i>Euphorbia myrsinites</i>)
Tarweed, coast	(<i>Madia sativa</i>)

Restricted

Limitation in seeds per pound

Burdock, common	(<i>Arctium minus</i>)	200
Hemlock, poison	(<i>Conium maculatum</i>)	10
Henbane, black	(<i>Hyoscyamus niger</i>)	10
Sandbur, longspine	(<i>Cenchrus longspinus</i>) [sic]	50
Thistle, bull	(<i>Cirsium vulgare</i>)	10

Effective January 1, 2001

Prohibited

Rocket, Dame's	(<i>Hesperis matronalis</i>)
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For additional information contact Mr. Leslie Zermuehlen, Colorado Department of Agriculture, 700 Kipling Street, Suite 4000, Lakewood, CO 80215-5894, telephone 303-239-4140.

KENTUCKY BLUEGRASS TRUENESS-TO-VARIETY PLOTS OBSERVED

Variety Specialist Al Burgoon and Branch Chief Jim Triplitt represented the SRTB at a mini-field day held April 15, at the University of Maryland's Upper Marlboro Research Farm. The purpose of the field day was to observe trueness-to-variety (TTV) test plots of Kentucky bluegrass being conducted by the SRTB in cooperation with the University of Maryland. Guests who attended included Dr. Kevin Morris of the National Turfgrass Evaluation Program, Dr. Tom Salt, Acting Commissioner of the PVP Office, Malcolm Sarna, Chief of the Turf and Seed Section of the Maryland Department of Agriculture, and several staff members from Mr. Sarna's office.

Burgoon explained the cooperative variety-testing program and led a tour of the plots. Much discussion ensued about Kentucky bluegrass varieties and the guests helped SRTB personnel evaluate the plots. Both Dr. Morris and Dr. Salt are turfgrass experts. Note taking and evaluation of the plots continued for another month. Many samples were identified that appeared to be contaminated or totally mislabeled. Additional investigation will be made, as necessary, for the apparently mislabeled seed.

TTV field-testing is conducted to enforce the FSA and ensure correct variety labeling of seed shipped in interstate commerce. Samples in the trials come to the SRTB from State seed control programs that take official samples of seed on the market in their State. Other test samples come from SRTB sampling in the District of Columbia and from seed catalog orders. SRTB organizes the test samples, groups them by the variety labeled, and plants them in the field along with an appropriate check sample. Check samples for comparing with the official samples are provided by plant breeders, seed companies, certification and foundation seed organizations, and other sources such as Dr. Morris.

SEED SAMPLING IN THE DISTRICT OF COLUMBIA

In April, SRTB marketing specialists sampled lawn and vegetable seeds in the District of Columbia for compliance with the FSA. The marketing specialists also checked seed to make sure germination tests were not out of date and that other labeling complied with the FSA. Seed offered for sale in the District of Columbia is considered to be in interstate commerce and must comply with the FSA. Each year SRTB personnel purchase assorted lawn and garden seed samples. This year seed was purchased from eight retail locations including hardware stores, a garden center, and general merchandise stores throughout the District of Columbia. All samples will be tested by the SRTB's Testing Section to determine if seed is truthfully labeled.

SEED SCHOOL HELD IN GEORGIA

In cooperation with the Georgia Department of Agriculture, the SRTB conducted a State/Federal Seed School in Atlanta during the week of May 11-15, 1998. In addition to presentations by personnel from the host laboratory, Botanists Susan Maxon and David Bitzel of our Testing Section provided instruction to 20 seed analysts during the week-long course. Participants came from two state seed laboratories (Georgia and South Carolina) and five commercial seed laboratories in four states (Georgia, Illinois, Mississippi, and Tennessee). Topics were selected to suit the interests of the participants involved and included purity testing, seed identification, noxious-weed seed examination, tetrazolium testing, and germination testing of species being tested by the participating laboratories.

UPCOMING SEED SCHOOLS

The next Federal Seed School is scheduled to take place in Ft. Collins, Colorado, October 5-9, 1998. More than 20 seed analysts have signed up to attend. Any additional registrations will be put on a waiting list.

We have also accepted an invitation by the Minnesota Crop Improvement Association, Minneapolis, to hold a seed school in May 1999. The exact dates have yet to be determined.

The SRTB regularly provides training for seed analysts as part of its function to promote uniformity in seed testing under the FSA.

AOSA SEED ANALYST ACCREDITATION EXAMINATION

The following information and application pertain to the next AOSA Seed Analyst Accreditation Examination:

**SUBJECT: ANNOUNCEMENT
SEED ANALYST ACCREDITATION EXAM**

**TO: NORTHEAST REGION
AOSA SEED LABORATORIES**

**FROM: Joe D. Garvey, Region III
AOSA Coordinator**

Date of examinations:
December 2, 1998 - Purity only
December 3, 1998 - Germination only

Location: **TENTATIVE**--PA Dept. of AG Seed Testing Laboratory, Harrisburg, PA.

Who is qualified: Any seed analyst with 24 months experience working in an official seed laboratory. A candidate may apply to take either examination. Two days will be necessary to complete both exams.

How to apply: Complete and return the application on the next page by September 30, 1998.

AOSA NORTHEAST REGION III LABORATORIES
REGISTRATION FORM FOR ACCREDITATION EXAMINATION

Please complete this form and return by September 30, 1998. The number of applicants for each examination will be limited and will be selected in order by date application is received.

1. Name of Applicant: _____
2. Name of Laboratory: _____
3. Laboratory Address: _____

4. Check below the exam(s) to be taken.

Purity - Written _____ Practical _____

Germination - Written _____ Practical _____

5. Upon receipt of the registration form the applicant will be sent a study package and other information.

Return to:

Joe D. Garvey
Seed Laboratory
2301 North Cameron Street
Harrisburg, PA 17110-9408

Examinations to be held on:

December 2, 1998 - Purity only
December 3, 1998 - Germination only

Additional forms, if needed, may be duplicated on your office copier.



A SEED SOAK PROCEDURE FOR TESTING CORN TOLERANT TO LIBERTY™ (GLUFOSINATE-AMMONIUM)

In the Fall 1997 issue of "Items of Interest in Seed Control," we summarized a preliminary procedure for testing corn for tolerance to the herbicide Liberty™ (glufosinate ammonium). That procedure involved applying the herbicide solution as a spray. The following is a seed soak method that results in a test of shorter duration.

Seed Imbibition

Moisten germination towels with water as you would for use in a corn germination test. We found it convenient to use 16 by 12 inch towels (regular weight). Place 2 layers of towels on a flat surface and plant 25 seeds. Cover the seeds with two additional germination towels and roll or fold the towels as for a germination test. Four sets of towels are bound together with rubber bands, and each set of 4 towels is placed upright in an 8 by 14 inch plastic bag. The sets of towels are placed at about 25°C for 24 to 30 hours to initiate imbibition (swelling and softening of seeds). Light intensity is not a critical factor, but the length of the imbibition period may affect the test results among various seed lots.

Seed Soak

Examine the imbibed seeds and discard any hard, moldy, or broken seeds before placing (gently) 50 seeds to a 100 mm petri dish. Immediately add about 25 ml of 0.05% Liberty™ solution to each dish. This amount should nearly cover the seeds. It is convenient to obtain the commercial Liberty™ with 18% active ingredient and mix 10 ml with 350 ml of tap water. Allow the imbibed seeds to soak for 1-2 hours at room temperature. Include seeds soaked in tap water as a control.

Replanting

Drain most of the solution from the petri dishes, and using protective gloves, replant the seeds, 25 per towel on the same towels used for imbibing the seeds. The seeds should be placed about 1 or 2 inches from the top edge of the towels. Group the towels containing the planted seeds in sets of 4 per plastic bag and place at about 25°C. Make observations on the fourth day after the soak treatment.

Evaluation

Susceptible seedlings are identified by a significantly shortened shoot (approximately 2 cm). Tolerant seedlings should show almost no effect of the seed soak and have long shoots (8-10 cm).

BARBARA HOWDERSHELL

Office Automation Clerk Barbara A. Howdershell passed away on May 24, 1998. Barbara had worked in the SRTB Testing Section. She was with the Branch from 1989 until she retired in March 1998.

NEW OFFICE AUTOMATION CLERK JOINS THE BRANCH

Linda Vanderhoof has rejoined the SRTB as an Office Automation Clerk. Linda will work in both the Testing and Regulatory Sections of the Branch, as needed. Linda worked for the SRTB previously when the Regulatory Section was still in Washington, D.C.

FEDERAL SEED ACT CASES SETTLED

The following cases were settled administratively under the FSA between April 1 and June 30, 1998. Under the administrative settlement procedure, the SRTB and the firms agreed to settle the cases for the amount specified with the firms neither admitting nor denying the charges:

- Burlingham Seeds, Forest Grove, OR has paid \$4500 for a case involving 13 seed shipments. The alleged violations, while not the same for all shipments, were false labeling of the rate of occurrence of noxious-weed seeds and of the seed's purity; shipping seed containing noxious-weed seeds in excess of a State's limits; and failure to list the presence of noxious-weed seeds and to show required information for a seed component in a mixture. Seed regulatory officials in Alabama, Kentucky, Maryland, Missouri, Tennessee, and Virginia cooperated in the initial sampling and inspection.
- Miller Seed Company, Inc., Clinton, MO has paid \$1050 for a case involving two seed shipments. The alleged violations, while not the same for both shipments, were failure to show the presence of noxious-weed seeds, to show required information for a seed component, and to keep required records; shipping seed containing noxious-weed seeds in excess of a State's limits; and false purity labeling. Seed regulatory officials in Kentucky and Virginia cooperated in the initial sampling and inspection.

RYEGRASS FLUORESCENCE LIST

Ron Cook, Chairman, National Grass Variety Review Board (NGVRB), explained the make up and function of the NGVRB in the AOSCA newsletter. Part of his article is excerpted here. The NGVRB evaluates grass varieties for certification and reviews documentation on perennial and annual ryegrass varieties for fluorescence variance consideration. Current board membership includes representatives of AOSCA, ASTA, National Council of Commercial Plant Breeders, Crop Science Society of America, ARS, Turfgrass Breeders Association, and *ex-officio* membership from USDA-PVP Office. Technical input is given by the AOSA and the Society of Commercial Seed Technologists.

NGVRB provides this listing for publication. Since our last listing of the NGVRB ryegrass fluorescence list, the NGVRB has made several changes and additions. The most recent information is from the August 9, 1998, NGVRB list. Perennial ryegrass varieties and experimental designations ISI-MBH, Lowgrow II, Panther, PICK Lp Q-93, Protocol, Stallion Supreme, Tove, Wind Dance, WVPB-PR-92-4, and WVPB PR C-2, C-2 have been added. Amended for varietal fluorescence percentage are Buccaneer, Delaware Dwarf, Express, Nobility, Pleasure, and Statesman II. Additionally, ISI-R2, Koos 90-2, LRF-94-B7E, and Pegasus are no longer listed as experimental designations. They have been added as R2, Twister, Bella, and Pegasus, respectively.

Perennial Ryegrass Variety Name	Percent Varietal Fluorescence	Perennial Ryegrass Variety Name	Percent Varietal Fluorescence	Perennial Ryegrass Variety Name	Percent Varietal Fluorescence
246	0.27%	Derby Supreme	2.85%	Pageant	2.22%
2CB	1.97%	Dillon	4.14%	Palmer	1.04%
856	0.87%	Divine	3.09%	Palmer II	1.51%
89-90	2.15%	Edge	1.73%	Palmer III	0.23%
90-14 ¹	7.12%	Elegance	1.51%	Panther	1.18%
A7 White ¹	2.19%	Elf	0.75%	Passport	1.06%
Academy	2.33%	Elite	4.84%	Patriot II	0.42%
Accent	0.56%	Envy	0.22%	Pearl	1.86%
Accolade	4.83%	Equal	1.98%	Pegasus	2.41%
Accord	4.08%	Evening Shade	1.17%	Pennant	0.50%
Achiever	0.93%	Excel	1.53%	Pennant II	1.63%
Advent	0.14%	Express	4.00%	PICK Lp Q-93 ¹	6.44%
Affinity	0.77%	Fiesta II	1.14%	Pick PR 15-91 (Jiffie) ¹	6.06%
Agresso	2.00%	Gator	0.88%	Pleasure	4.09%
All*Star	0.47%	Gettysburg	2.74%	PR8820	0.79%
Allaire II	1.15%	Greenland	1.20%	Prelude	1.72%
APM	0.59%	Grimalda	2.00%	Prelude II	2.25%
Aquarius	0.97%	Headstart	2.09%	Prelude III	0.59%
Archer	1.51%	Imagine	1.31%	Prizm	0.71%
Assure	0.72%	ISI-MBH ¹	1.27%	Protocol	4.30%
Bedford	1.40%	ISI-RUPR (Gator II) ¹	2.50%	Quickstart	0.18%
Bella	0.65%	Laredo ¹	0.53%	R2	1.25%
Blackhawk	1.17%	Legacy	0.37%	Regency	0.99%
Blazer III	1.18%	Lindsay	1.72%	Repell	0.33%
Boardwalk	2.72%	Line Drive	2.72%	Repell II	1.56%
Breeze	1.57%	Linn	5.00%	Repell III	0.80%
Brightstar	1.79%	Lowgrow	1.31%	Reveille	2.00%
Brightstar II	2.24%	Lowgrow II	1.35%	Riviera	0.58%
Buccaneer	7.44%	LRF-94-C8 ¹	0.64%	Riviera II	1.08%
C-21	6.28%	Lynx	4.19%	Roadrunner	2.53%
Caliente	0.74%	Magic	1.21%	Rodeo II	2.47%
Calypso	1.29%	Majesty	1.59%	Saturn II	0.85%
Calypso II	0.47%	Manhattan II	0.65%	Seville	0.33%
Catalina	3.18%	Manhattan 3	0.88%	Sherwood	1.08%
Cathedral	0.85%	Mardi Gras	1.07%	Shining Star	0.10%
Chaparral	1.62%	Morningstar	0.87%	Sonata	1.20%
Charger II	0.54%	Mulligan	1.86%	SR 4100	0.37%
Charisma	2.39%	Navajo	0.37%	SR 4200	0.34%
Chatham ¹	2.11%	Newlinn	5.85%	Stallion Select	2.37%
Citation III	0.96%	NightHawk	1.39%	Stallion Supreme	1.16%
Commander	1.02%	Nobility	7.53%	Stardance	1.90%
Cutter	1.65%	Nomad	1.03%	Statesman	1.27%
Dancer	0.78%	Nova	1.00%	Statesman II	8.42%
Dandy	2.00%	Omega 3	0.73%	Target	3.28%
Delaware Dwarf	2.60%	Omni	0.51%	Tonga	11.53%

Perennial Ryegrass Variety Name	Percent Varietal Fluorescence
Top Hat	0.77%
Tapeka	2.34%
Tove	17.48%
Twister	3.85%
Vantage	2.19%
Vivid	1.24%
Wild Dance	1.17%
Wind Star	0.47%
Wizard	2.57%
WVPB-93-KFK ¹	3.84%
WVPB-PR-92-4 ¹	5.48%
WVPB-PR-C-2, C-2 ¹	8.65%
Yorktown III	1.42%

Annual Ryegrass Variety Name	Percent Varietal Fluorescence
Florida 80	98.89%
Grazer	99.78%
Gulf	99.02%
Jackson	98.80%
Magnolia	*
Marshall	96.00%
Pio ¹	98.97%
Surrey	98.91%
TAM 90	98.45%

¹ Experimental Designation and/or
Variety

* Exempt from varietal fluorescence
testing calculations.

Additions to
Plant Variety Protection
Certificates

PLANT VARIETY PROTECTION CERTIFICATES
(Issued April 14, 1998, through July 16, 1998)

KIND VARIETY	APPLICANT	TITLE V 1994 (GEN.) PVPA
CORN, FIELD		
01DFA3	DEKALB Genetics Corporation	Y
01IBH10	DEKALB Genetics Corporation	Y
01IZB2	DEKALB Genetics Corporation	Y
2FADBSR	DEKALB Genetics Corporation	Y
91BMA2SR	DEKALB Genetics Corporation	Y
942	Novartis Seeds, Inc.	Y
993	Novartis Seeds, Inc.	Y
F298W	DEKALB Genetics Corporation	Y
FBPL	DEKALB Genetics Corporation	Y
LH179	Holden's Foundation Seeds, Inc.	Y
NP2011	Novartis Seeds, Inc.	Y
PHEI4SR	DEKALB Genetics Corporation	Y
WQCD10	DEKALB Genetics Corporation	Y
FESCUE, TALL Cambridge Montauk	Olsen-Fennell Seeds, Inc. Jonathan Green and Sons, Inc. and Cascade International Seed Company	
LETTUCE Marksman	Arthur Yates and Company Pty. Ltd.	
RICE A-201	California Cooperative Rice Research Foundation, Inc.	Y (3) Y
SOYBEAN 9004 9584	Agriculture Canada Pioneer Hi-Bred International, Inc.	Y Y

(*) No limit to the number of generations of certified seed beyond breeders seed.

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